## Figure 1: MS alignment

1 MTILNHTLGFPRVGLRRELKKAQESYWAGNSTREELLAVGRELRARHWDQQKQAGIDLLP MVQ.SAVLGFPRIGPNRELKKATEGYWNGKITVDELFKVGKDLRTQNWKLQKEAGVDIIP MASHIVGYPRMGPKRELKFALESFWDGKSSAEDLKKVAADLRSSIWKQMADAGIKYIP MASHIVGYPRMGPKRELKFALESFWDKKSSAEDLQKVAADLRSSIWKQMADAGIKYIP	VGDFAWYDHVLTTSLLLGNVPARHQN.KDGSVDIDTLFRIGRG.RAPTGE.BAAA SNDFSFYDQVLDLSLLFNVIPDRYTKYDLSPI.DTLFAMGRGLQRKATETEKAVDVTAL XNTFSYYDQVLDTTAMLGAVPARY.NWAGGEIAFDTYFSMARG.NXSVPAM SNTFSYYDQVLDTATMLGAVPPRY.NFAGGEIGFDTYFSMARG.NASVPAM	121 EMTKWFNTNYHYMVPEFVKGQQFKLTWTQLLDEVDEALALGHKVKPVLLGPVTWLWLGKV EMVKWFDSNYHYVRPTFSKTTQFKLNGQKPVDEFLEAKELGIHTRPVLLGPVSYLFLGKA EMTKWXDTNYHFIVPELGPDVNFSYASHKAVDEYKEAKGLGVDTVPVLIGPVSYLLLSKP EMTKWFDTNYHYIVPELGPEVNFSYASHKAVNEYKEAKELGVDTVPVLVGPVTFLLLSKP	181 . KGEQ FDRLSLLNDILPVYQQVLAELAKRGIEWVQIDEPALVLELPQAWLDAYKPAYD DKDSLDLEPL. SLLEQLLPLYTEILSKLASAGATEVQIDEPVLVLDLPANAQAAIKKAYT AKGVEKSFPLLSLLDKVLPIYKEVIAELKAAGASWIQFDEPTLVLDLQAHQLEAFTKAYA AKGVEKTFPLLSLLDKILPVYKEVIGELKAAGASWIQFDEPTLVLDLESHQLEAFTKAYS
E. coli MS yeast MS tobacco MS C. roseus MS corn MS/partial soy MS/partial	E. coli MS yeast MS tobacco MS C. roseus MS corn MS/partial soy MS/partial	E. coli MS yeast MS tobacco MS C. roseus MS corn MS/partial soy MS/partial	E. coli MS yeast MS tobacco MS C. roseus MS corn MS/partial soy MS/partial

### FIGURE 1 CONTINUED

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ALQGQVKLLLTTYFEGVTPNLDTITALPVQGLHVDLVHGKDDVAELHKRLPSD YFGEQSNLPKITLATYFGTVVPNLDAIKGLPVAALHVDFVRAPEQFDEVVAAIGNK ELESSLSGLNVLTETYFADVPAEAFKTLTALKGVTAFGFDLVRGAQTLDLIKGGFPSG ELESTLSGLNVIVETYFADIPAETYKILTALKGVTGFGFDLVRGAKTLDLIKGGFPSG	SCSLLHSPID SSSLLHTPVD SCSLLHTAVD SCSLLHTAVD	420 EVKSWFAFALQKCHELALLRDALNSGDTAA.LAEWSAPIQARRHSTRVHNPAVEKRLAAI EIKGFFSFATQKLDEVVVITKNVSGQDVAAALEANAKSVESRGKSKFIHDAAVKRRVASI EIKSWLAFAAQKVVEVNALAKALAXHKDEAFFSANATAQASRKSSPRVTNEAVQKAAAAL EIKSWLAFAAQKVVEVNALAKALAGEKDEAFFSENAAAQASRKSSPRVTNQAVQKAAAAL EIKSWLAFAAQKVVEVNALAKALAGEKDEAFFSENAAAQASRKSSPRVINEAVQKAAAAL	421 TAQDSQRANVYEVRAEAQRARFKLPAWPTTTIGSFPQTTEIRTLRLDFKKGNLDANNYRT DEKMSTRAAPFEQRLPEQQKVFNLPLFPTTTIGSFPQTKDIRINRNKFNKGTISAEEYEK KGSDHRRATNVSSRLDAQQKKLNLPVLPTTTIGSFPQTVELRRVRREYKAKKISEEEYVK RGSDHRRATTVSARLDAQQKKLNLPVLPTTTIGSFPQTLELRRVRREYKAKKISEDDYVK KGSDHRRATTVSARLDAQQKKLNLPVLPTTTIGSFPQTLELRRVRREYKAKKISEDDYVK KGSDHRRATNVSARLDAQQKKLNLSVLPTTTIGSFPQTADLRRVRREFKANKISEEEYVK
E. coli MS yeast MS tobacco MS C. roseus MS corn MS/partial soy MS/partial	E. coli MS yeast MS tobacco MS C. roseus MS corn MS/partial soy MS/partial	E. coli MS yeast MS tobacco MS C. roseus MS corn MS/partial soy MS/partial	E. coli MS yeast MS tobacco MS C. roseus MS corn MS/partial soy MS/partial

HTHMCYSNFNDIIHSIIDMDADVITIE.NSRSDEKLLSVFREGVKYGAGIXPGVYDIHSP

corn MS/partial soy MS/partial

#### CONTINUED \_ FIGURE

	540 YGSRCVKP YGSRYVRP YGSRCVKP YGSR	600 FIAKQIAL FQAMQLAL ETCYQIAX ETCYQIAL ETTYQIAL	660 VAKDDTQI SVANKTQI SIQDTTQI SVQDTTQI	720 SVYDIHSP SLFDIHSP SVYDIHSP
CHONTINON T PROPER	481 GIAEHIKQAIVEQERLGLDVLVHGEAERNDMVEYFGEHLDGFVFTQNGWVQSYGSRCVKPFINSEIEKVIRFQEEIGLDVLVHGEPERNDMVQYFGEQINGYAFTVNGWVQSYGSRYVRPAIKAEIKKVVDLQEELDIDVLVHGEPERNDMVEYFGEQLSGFAFTANGWVQSYGSRCVKPAIKEEISKVVKLQEELDIDVLVHGEPERNDMVEYFGEQLSGFAFTANGWVQSYGSRCVKPAIKEEISKVVKLQEELDIDVVVHGEPERNDMVEYFGEQLSGFAFTANGWVQSYGSR	600 PIVIGDISRPAPITVEWAKYAQSLTDKPVKGMLTGPVTILCWSFPREDVSRETIAKQIAL PIIVGDLSRPKAMSVKESVYAQSITSKPVKGMLTGPITCLRWSFPRDDVDQKTQAMQLAL PIIVGDLSRPNPMTVFWSKTAQSMTKRPMKGMLTGPVTILNWSFVRNDQPRXETCYQIAX PIIYGDVSRPNPMTVFWSQTAQSMTKRPMKGMLTGPVTILNWSFVRNDQPRFETCYQIAL PIIYGDVSRPNPMTVFWSSLAQSFTKRPMKGMLTGPVTILNWXFVRNDQPRSETTYQIAL	601 ACVMKWPIWKPLELASSRLTNRRLRQGLPLRRS.DWDAYLQWGVEAFRINAAVAKDDTQI ALRDEVNDLEAAGIKVIQVDEPALREGLPLREGTERSAYYTWAAEAFRIATSGVANKTQI XIKDEVEDLEKAXITVIQIDEAALREGLPLRKA.EHAFYLNWAVHSFRITNVGIQDTTQI AIKDEVEDLEKAGINVIQIDEAALREGLPLRKA.EHAFYLDWAVHSFRITNLPLQDTTQI AIKDEVEDLEKAGITVIQIDEAALREGLPLXKS.EQAHYLDWAVHAFRITNVGVQDTTQI	720 HTHMCYCEFNDIMDSIAALDRDVITIE.TSRSDMELLESFEE.FDYPNEIGPGVYDIHSP HSHFCYSDLDPNHIKALDADVVSIEFSKKDDANYIAEFKNYPNHJGLGLFDIHSP HTHMCYSNFNDIIHSIIDMDADVITIE.NSRSDEKLLSVFREGVKYGAGIGPGVYDIHSP
	E. coli MS yeast MS tobacco MS roseus MS MS/partial MS/partial	E. coli MS yeast MS tobacco MS roseus MS MS/partial MS/partial	E. coli MS yeast MS tobacco MS roseus MS MS/partial MS/partial	E. coli MS yeast MS tobacco MS roseus MS
	E. C. r Corn MS Soy MS	Corn M. soy M.	Corn M. soy M.	C. E.

### FIGURE 1 CONTINUED

721 NVPSVEWIEALLKKAAKRIPAERLWVNPDCGLKTRGWPETRAALANMVQAAQNLRRG RIPSKDEFIAKISTILKSYPAEKFWVNPDCGLKTRGWEETRLSLTHMVEAAKYFREQY RIPSTEEIADRVNKMLAVLDTNILWVNPDCGLKTRKYAEVKPALENMVSAAKAIRTQLAS RIPSTEEIADRINKMLAVLDTNILWVNPDCGLKTRKYAEVKPALENMVSAAKLIRTQLAS	RIPPTEEIADRINKMLAVLEKNILWVNPDCGLKTRKYTEVKPALTNMVAAAKLIRNELAK 781  KN. SK. AK.
E. coli MS yeast MS tobacco MS C. roseus MS corn MS/partial	soy MS/partial yeast MS tobacco MS C. roseus MS corn MS/partial

### FIGURE 2

**************************************	MASHIVGYPRMGPKRELKFALESFWDKKSSAEDLQKVAADLRSSIWKQMADAGIKYIPSN 1 60	* * * * * * * * * * * * * * * * * * *	QVLDTATMLGAVPPRYNFAGGEIGF	*****  VPELGPSTKFTYASHKAVSEYKEAKALGIDTVPVLVGPVSYLLLSKPAKGVEKSFSLLSL  VPELGPDVNFTXASQKAVDEYKEAKALGVDTIPVLVGPVTYLLLSKPAKGVEKSFSLLSL  VPELGPDVNFSYASHKAVDEYKEAKGLGVDTVPVLIGPVSYLLLSKPAKGVEKSFPLLSL  VPELGPDVNFSYASHKAVDEYKEAKGLGVDTVPVLIGPVSYLLLSKPAKGVEKSFPLLSL	VPELGPEVNFSYASHKAVNEYKEAKELGVDTVPVLVGPVTFLLLSKPAKGVEKTFPLLSL 121
SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:10 SEQ ID NO:11		SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:08 SEQ ID NO:10	EV IU NO: 1	SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:08 SEO ID NO:10	30 ID NO:11

## FIGURE 2 CONTINUED

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SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:10 SEQ ID NO:11	SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:08 SEQ ID NO:10 SEQ ID NO:11	SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:10 SEQ ID NO:11

# FIGURE 2 CONTINUED

****** * * * * * * * * * * * * * * * *	VNALAKALAGEKDEAFFSENAAAQASRKSSPRVTNQAVQKAAAALRGSDHRRATTVSARL 361	******** ******** ***** **** ** * * *	DAQQKKLNLPILPTTIGSFPQTMDLRRVRREYKAKEDLXGVCQCYQGRNXQRLSRFKEE DAQQKKLNLPVLPTTIGSFPQTLELRRVRREYKAKKISEDDYVKAIKEEISKVVKLQEE 421	* * YAT' NVT'	LDIDVLXQL
SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:08 SEQ ID NO:08	EQ ID NO:	SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:08	EQ ID NO:1 EQ ID NO:1	SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:08	EQ ID NO:1 EQ ID NO:1

720

# FIGURE 2 CONTINUED

FIGURE 2 CONTINUED	** *** * *** * ****** *** *** ** ** **	-WRS	**************  VIQIDEAALREGLPLRKSEHAFYLDWAVHSFRITNCGVQDTTQIHTHMCYSNFNDIIHSI  VIQIDEAALREGLPLRKSEQAHYLDWAVHAFRITNVGVQDTTQIHTHMCYSNFNDIIHSI  VIQIDEAALREGLPLRKAEHAFYLNWAVHSFRITNVGIQDTTQIHTHMCYSNFNDIIHSI  VIQIDEAALREGLPLRKAEHAFYLNWAVHSFRITNVGIQDTTQIHTHMCYSNFNDIIHSI	VIQIDEAALREGLPLRKAEHAFYLDWAVHSFRITNLPLQDTTQIHTHMCYSNFNDIIHSI 601	****** ***** **** ********************	IDMDADVMTIENSRSSEKLLSVFREGVKYGAGIGPGVYDIHSPRIPSTEEIADRINKMLA
	SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:08	EQ ID NO:1 EQ ID NO:1	SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:08	EQ ID NO:1 EQ ID NO:1	SEQ ID NO:02 SEQ ID NO:04 SEQ ID NO:06 SEQ ID NO:08	EQ ID NO:1 EQ ID NO:1

### CONTINUED N FIGURE

FIGURE 2 CONTINUED	* *********** *** *** ** * * * * * * *
	ID NO:02 ID NO:04 ID NO:06 ID NO:08 ID NO:10 ID NO:11
	SEQ I